

**Amendment and Response**

Applicant: Michael R. Krause et al.

Serial No.: 09/980,920

Filed: April 11, 2002

Docket No.: 10002166-2

Title: MEMORY MANAGEMENT IN DISTRIBUTED COMPUTER SYSTEM

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**REMARKS**

The following remarks are made in response to the Office Action mailed October 6, 2005. Claims 1-34 were rejected. With this Response, claim 1 has been amended. Claims 1-34 remain pending in the application and are presented for reconsideration and allowance.

**Claim Rejections under 35 U.S.C. § 102 and 35 U.S.C. § 103**

The Examiner rejected claims 1-2, 6-7, 9-13, 16-17, 19-20, 23-29, and 32-33 under 35 U.S.C. § 102(b) as being anticipated by the Futral et al. U.S. Patent No. 5,991,797.

The Examiner rejected claims 3-5, 8, 21-22, and 25 under 35 U.S.C. § 103(a) as being unpatentable over the Futral et al. U.S. Patent No. 5,991,797 in view of the Regnier et al. U.S. Patent No. 6,647,423.

The Examiner rejected claims 14-15, 18, 30-31, and 34 under 35 U.S.C. § 103(a) as being unpatentable over the Futral et al. U.S. Patent No. 5,991,797 in view of the Forin U.S. Patent No. 6,360,220.

Amended independent claim 1 claims a method of managing memory in a distributed computer system and independent claim 19 claims a distributed computer system. Amended independent claim 1 and independent claim 19 include limitations related to binding a remote key to a first address representing a contiguous memory address range accessible by a first consumer process at a first endnode, sending the bound remote key and first address from the first endnode to a second endnode on a communication fabric, and performing a remote direct memory access operation with a second consumer process from the second endnode to access the contiguous memory address range including sending the bound remote key and the first address from the second endnode to the first endnode on the communication fabric. These limitations are not taught or suggested by the Futral et al. patent.

The Futral et al. patent teaches a method for directing transfer of input/output (I/O) of an I/O device to other processing units in a computer system including first and second processing units and an I/O unit coupled to an interconnect fabric. The second processing unit controls access to the I/O unit, which is coupled to an I/O device. Memory fragments of the first processing unit are registered with the interconnect fabric to get memory handles for the memory fragments. A list is created having an identifier of the first processing unit, the

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memory handles, and virtual addresses and links of memory fragments. The list is sent from the first processing unit to the second processing unit. The list is sent from the second processing unit to the I/O unit. The identifier of the first processing unit is examined and a communications connection from the I/O unit to the first processing unit is determined. I/O data is transferred over the communication connection between and I/O unit and memory referenced by the memory handles and virtual addresses. The method supports peer-to-peer operation where a number of different I/O units, each with its own physical memory addressing domain, require access to the same I/O device. In the embodiment specifically described at column 5 referenced by the Examiner, the combination of a platform identifier, a memory handle for registered memory, and a virtual address uniquely identifies memory located anywhere in a clustered computer system.

Thus, the Futral et al. patent does not teach or suggest limitations of amended independent claim 1 and independent claim 19 related to performing a remote direct memory access operation with a second consumer process from a second endnode to access the **contiguous memory address range accessible by a first consumer process at a first endnode** including sending the bound remote key and the first address from the second endnode to the first endnode. Instead, the Futral et al. patent teaches a second host system directing an I/O device to transfer data between a requesting application program's buffers on a first host system and an I/O unit coupled to the I/O device without the need to pass through the second host system, where the second host system retains control of the I/O request.

In view of the above, the Futral et al. patent does not teach or suggest the method of amended independent claim 1 or the distributed computer system of independent claim 19. Furthermore, dependent claims 2-18 further define patentable distinct amended independent claim 1 and dependent claims 20-34 further define patentably distinct independent claim 19. Therefore, these dependent claims are also believed to be allowable.

Therefore, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 102 and § 103 rejections to claims 1-34, and request allowance of these claims.

**CONCLUSION**

In view of the above, Applicants respectfully submits that pending claims 1-34 are in form for allowance and are not taught or suggested by the cited references. Therefore,

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reconsideration and withdrawal of the rejections and allowance of claims 1-34 is respectfully requested.

No fees are required under 37 C.F.R. 1.16(h)(i). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 08-2025.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to either Patrick G. Billig at Telephone No. (612) 573-2003, Facsimile No. (612) 573-2005 or William J. Streeter at Telephone No. (970) 898-3886, Facsimile No. (970) 898-7247. In addition, all correspondence should continue to be directed to the following address:

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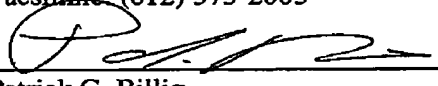
Respectfully submitted,

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**CERTIFICATE UNDER 37 C.F.R. 1.8:** The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 6 day of January, 2006.

By   
Name: Patrick G. Billig